

### dpr

### Data Needed for Documentation

- Interviews:
  - -Interview of person involved
  - Interview of employer, foreman, supervisor or any individual who knows of the incident

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### Data Needed for Documentation

- Types of Symptoms:
- Irritant Symptoms
  - Mostly symptoms affecting the eye and skin causing redness, swelling, itching, tearing.

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### Data Needed for Documentation

- Types of Symptoms:
  - Systemic Symptoms
    - Mostly symptoms affecting the wellbeing of the person involved.
    - Headache, dizziness, lightheadedness, restlessness, anxiety, vomiting, diarrhea, convulsions, respiratory depression.

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### Data Needed for Documentation

- Types of Symptoms:
  - -Respiratory symptoms
    - Mostly symptoms affecting the upper respiratory tract
    - Coughing, shortness of breath, nasal irritation, throat irritation.

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### Data Needed for Documentation • Types of Symptoms - Allergic Symptoms • Symptoms seen in predisposed individuals who have a history of being allergic to chemicals • Most of this information is from the individual or from the doctor who knows of the patient's history.



### Data Needed for Documentation

- Relationship of exposure to symptoms
  - –How long after exposure did the symptoms develop?
  - -How long ago was the application done in the field or structure?
  - What kind of pesticides were loaded into the equipment in question?

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### **Skin Irritants**

- Fungicides Ziram and all thiocarbamates
  - 1990, 26 cases of dermatitis among pear harvesters in Washington state, entered field 5 days after application.
  - Residue data from manufacturer stated a
     9-day half-life for the chemical
  - Reentry interval increased to 14 days
  - Other related chemicals, Maneb and Zineb

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### **Skin Irritants**

- Fungicides Elemental sulfur
  - Large number of cases in California imply sulfur is a potent skin irritant
  - Studies revealed elemental sulfur is a strong experimental allergen
  - Study on California nursery workers revealed several apparent allergic reactions to 1% elemental sulfur

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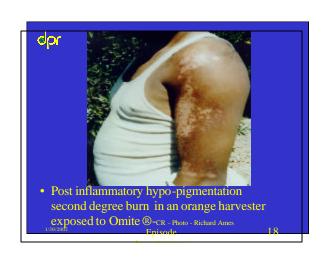




### Skin Irritants Insecticides and Miticides Chlorpyrifos From 1982-1983, 25 cases of dermatitis were attributed to exposure to chlorpyrifos Three cases were the most likely to have been caused by exposure Published literature does not contain reports of allergic reaction to chlorpyrifos Episode 15





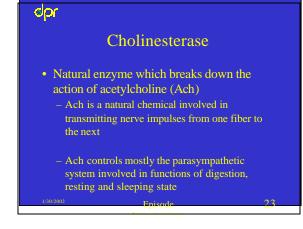


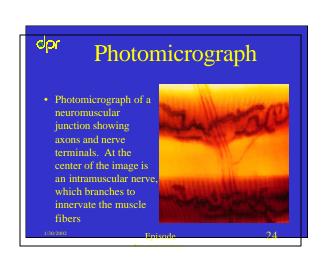


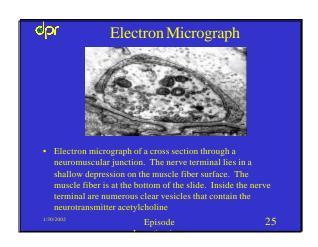


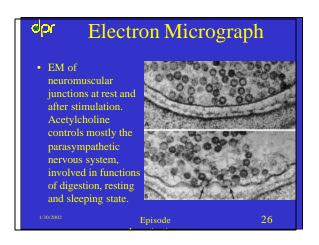


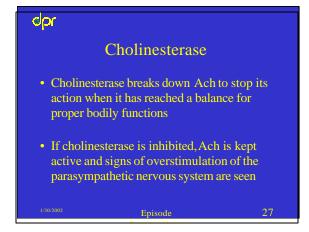


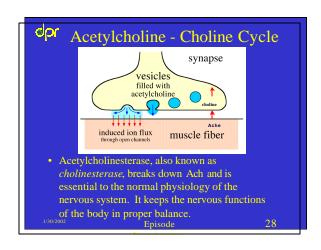


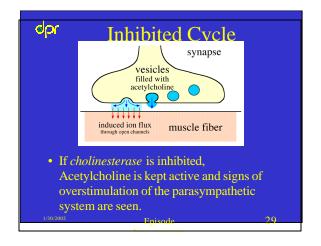


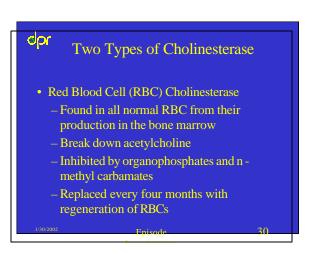












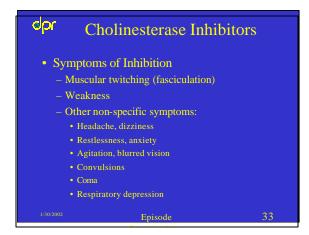
### dpr Two Types of Cholinesterase • Plasma Cholinesterase – Produced by the liver and released into the blood stream – Has the same function as RBC cholinesterase – Any condition that affects the function

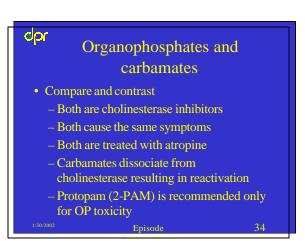
of the liver may decrease plasma cholinesterase

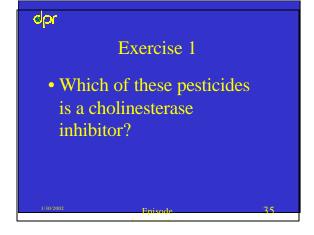
– Also inhibited by organophosphates and n-methyl carbamates

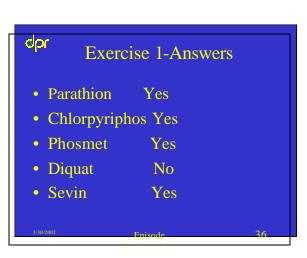
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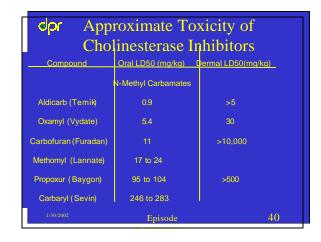


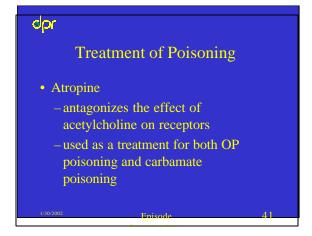


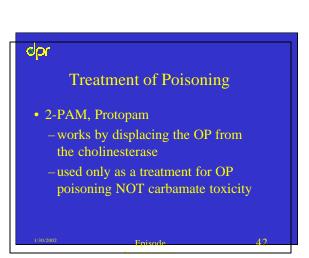
### Exercise 1-Answers Permethrin No Dichlorvos Yes Amitraz No Systox Yes (demeton) Vydate Yes (oxamyl) Episode 37

dpr Approximate Toxicity of Cholinesterase Inhibitors			
Compound C	ral LD 50 (mg/kg) [	ermal LD50 (mg/kg)	
Organophosphates			
Phorate (Thimet)	2 to 4	20 to 30	
Disulfoton (Disyston)	2 to 12	6 to 25	
Fensulfothion (Dasanit)	2 to 10	3 to 30	
Demeton (Systox)	2.6 to 6	8.2 to 14	
Mevinphos (Phosdrin)	3 to 12	16 to 33	
Parathion Azinphos-methyl	4 to 13 5 to 20	55 220	
Fenamiphos (Nemacur)	8.1 to 9.6	178 to 225	
Methyl parathion	9 to 25	300 to 400	
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dpr Approximate Toxicity of			
Cholinesterase Inhibitors			
Compound	Oral LD50 (mg/kg)	<del>Dermal Id50 (mg/k</del> g)	
Methamidophos	18 to 21	118	
Methidathion	44	200	
Dichlorvos (DDVP)	56 to 80	75 to 107	
Oxydemeton-methyl	65 to 75	350	
Propetamphos	119	2300	
Phosalone	120	1530	
Phosmet	147 to 316	>4640	
Dimethoate	215	>100	
Diazinon	300 to 400	3600	
Naled	430	1110	
Acephate	866 to 945	>10,250	
Malathion	1000 to 1375	4100	







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### Employer's Responsibility

- 3CCR § 6728
  - An employee who regularly handles OP or carbamate pesticides with the signal word "Danger" or "Warning" must have access to medical care and supervision by a physician
  - All those employees must have RBC and plasma cholinesterase baselines determined before working with the pesticides

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### Employer's Responsibility

- Baseline cholinesterase levels must be verified every two years
- New employees are to be tested within 3 days after each 30 day period in which the pesticides are handled. Three tests are required at 30 day intervals.
- Afterwards, testing shall be done every 60 days or as deemed necessary by physician.

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### Cholinesterase Tests

- Significance of Cholinesterase Tests
  - -ChE tests measure the amount of cholinesterase in the blood. If an employee has a recorded baseline level and the exposure tests are below 60% of their baseline, the employee has to be removed from work until their levels are 80% of their baseline

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### Cholinesterase Tests

- Methods:
  - -Two types of ChE tests:
    - Boehringer Mannheim Test kit
    - Sigma Test kit
    - These two tests use different methods to measure the ChE and the units of reporting are different.

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### **Cholinesterase Tests**

- Methods:
  - If the baseline levels of an employee are tested using one method in a laboratory, the exposure or follow-up tests should also be tested by the same method and laboratory
  - If not, the results are not comparable to each other and a definitive conclusion as to cholinesterase inhibition cannot be derived.
  - Employers are required to investigate employees' work practices

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### Investigations with Inadequate Data

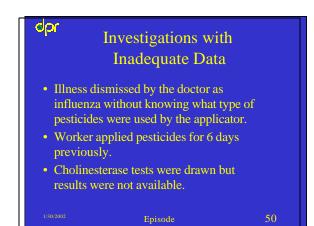
- Mechanic working on a truck used previously for loading pesticides
  - Investigator did not take note of what pesticides were loaded in the truck

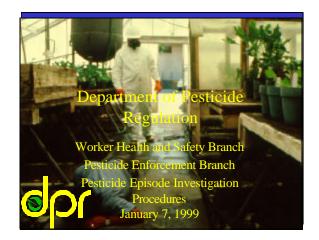
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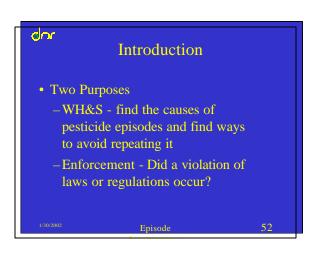
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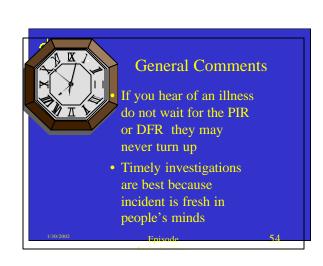
## Investigations with Inadequate Data • Illness caused by exposure to paint treated with chlorothalonil to prevent mildew —Investigator noted illness was not pesticide related

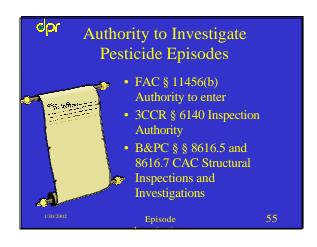


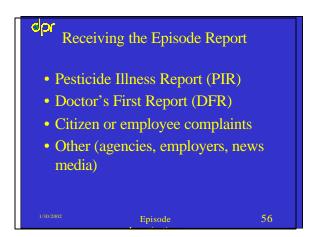


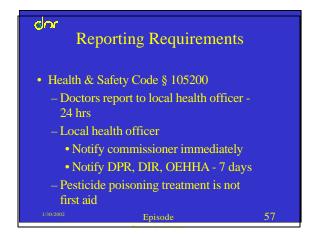


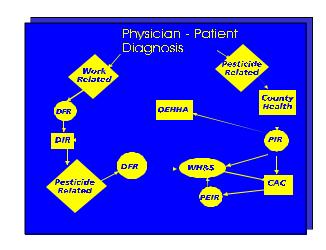












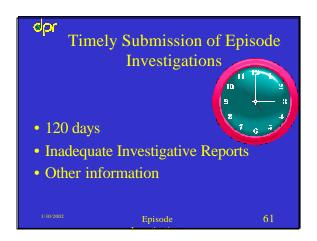
The Next Step

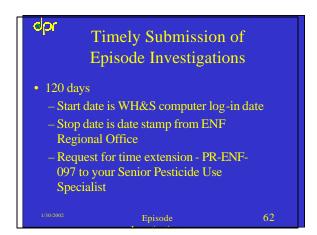
• DPR screens PIRs and DFRs

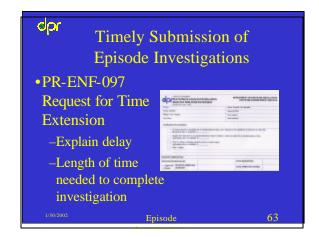
• PIRs are assigned case numbers unless clearly not pesticide related

• DFRs are assigned case numbers when there is evidence of possible pesticide involvement





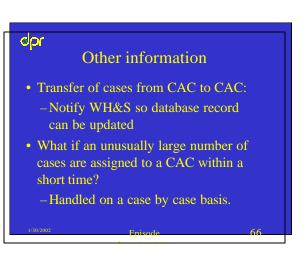


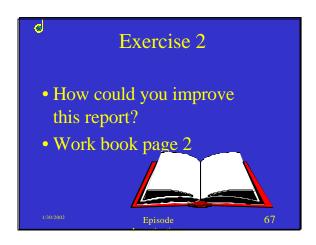


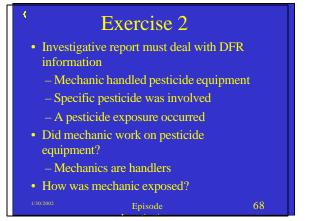


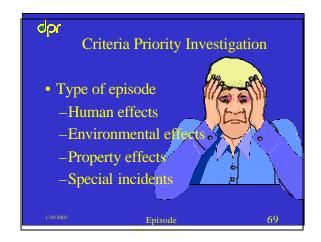
Inadequate Investigative Reports

-Inadequate investigative reports do not include cases where the investigator has made a reasonable attempt to obtain information.



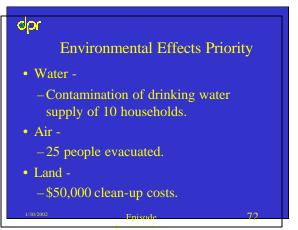
















### Special Incidents Those occurring in Mexico, other states, tribal lands With effects in California Those occurring in California

- With effects in Mexico, other states, tribal lands
- Aircraft accidents

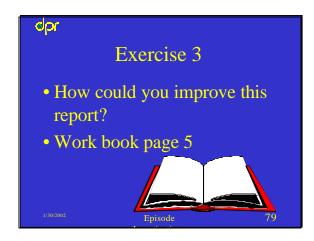
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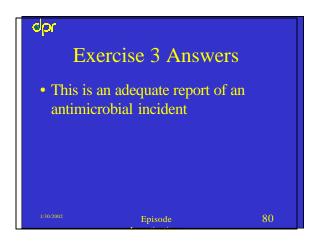
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## Jurisdiction • CAL OSHA has jurisdiction over non-use related pesticide episodes • CAL OSHA has jurisdiction over use-related episodes of 3 specific pesticides • Other agencies (DFG, US EPA)

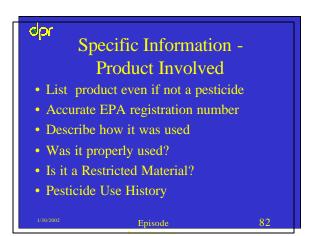
### Investigation Objectives • Emphasis on exposure information • Recreate the picture • Burden of proof is on the investigator • We prefer more, rather than less, detail • Do not assume only one person was involved



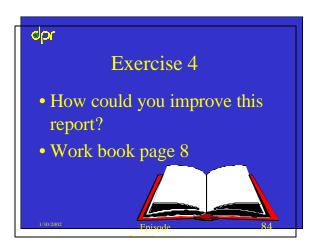




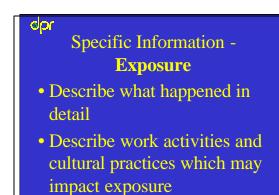








## Exercise 4 Answers • "No compliance or enforcement action taken" —But, were there any violations? • Was there an HQ inspection? • Were training records checked?



Specific Information Training

• Attach training records for involved employees

• Evaluate employee's knowledge

• Evaluate the quality of the training

• Was the trainer certified?

• Were the field workers trained?

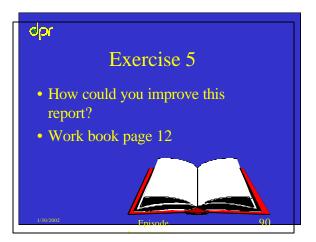
Specific Information Symptoms

• Ask each person
- Symptoms - onset and duration
- Time between exposure and symptoms

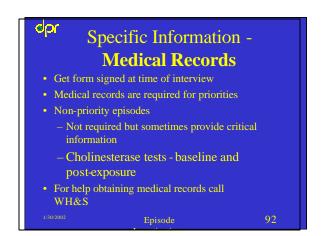
• Do not assume PIR or DFR are accurate

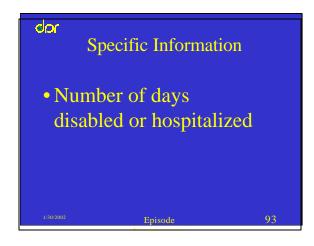
Specific Information 
Medical Care

• Check for medical supervision
• Was employee taken for medical treatment
• Time between symptoms and medical treatment



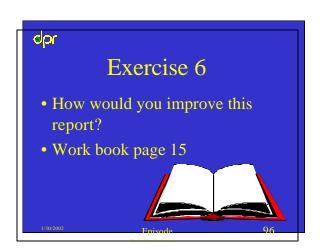
## Exercise 5 Answers • Who was interviewed? • Did the field worker enter the field? • Need an application history (60 days), more than just the last application • Complete a dermatitis form • Complete HQ inspection form • Was the field worker trained? • Who took him to the doctor?

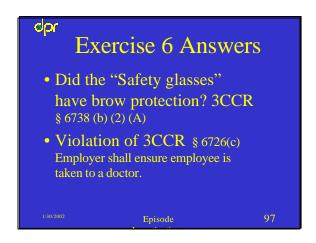






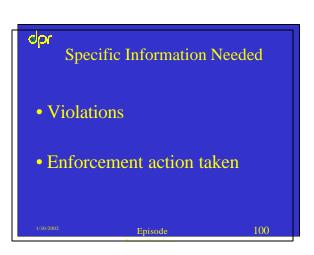




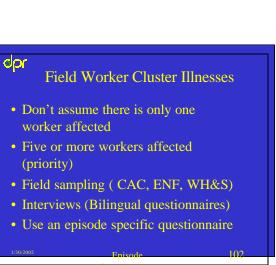








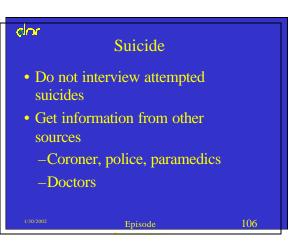
## Investigative Conclusions • Acceptable -Were there any violations? -Causative agent is not a pesticide nor used as one • Not acceptable -Conclusions or personal opinions based on medical evidence



### Employee Complaints • Confidential • No advanced notice to employer • Complaint triggers inspections: - WPS, use monitoring and records inspections • Other agencies (Cal/OSHA & DFG)



### Consumer Produce Complaints • Report information to County Health Officer • Collect produce sample • Determine origin of produce



### Agricultural Fatalities • Protocol for Collection of Samples During Investigation of Agricultural Fatalities - WH&S Letter 94-5 - Investigative Techniques Manual page 24 - Give to the coroner • Contact WH&S for assistance | Sangle | 107

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# Aircraft Mishaps • Was pilot's judgement or ability affected by pesticide exposure? • Get pilot's work history • Get cholinesterase test results • Determine the probable cause of the crash from interviews and reports

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### Illegal residues on crops

- Identify contaminated fields
- Collect samples
- Chain of custody
- Control affected source
- Prohibit harvest
- Consider prohibiting re-entry

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### Public Disclosure

- Commissioner contacts county counsel
- Governed by California Public Records Act
  - -Medical Records
  - -Personal identifiers
- Under investigation

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### TOP TEN REASONS FOR LATE REPORTS

- 6. I didn't take this job to be a pesticide cop
- 7. It's permit season
- 8. Doctor's First Report indicates R/O pesticides
- 9. I already sent it up 3 times. I'll have to make you another copy
- 10. It's only been 119 days

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Episode

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### TOP TEN REASONS FOR LATE REPORTS

- 1. El Niño
- 2. Didn't think Roundup® was a pesticide
- 3. It's not an agricultural case
- 4. My Senior didn't tell me I had to do it
- 5. He's in Mexico

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